Ohio Conference on Freight

Current Research In Transportation and Logistics

Wednesday, September 17, 2008

Richard S. Martinko, P.E.
Director: Intermodal Transportation Institute & University Transportation Center
Welcome to the Intermodal Transportation Institute

With the leadership and support of President Daniel M. Johnson, the University of Toledo (UT) initiated efforts to establish an Intermodal Transportation Institute (ITI). The purpose of the ITI is to work cooperatively with public and private sector partners in transportation, logistics, and supply chain management to increase economic opportunity and improve the quality of life. The ITI's purpose is strongly linked to the goals and objectives of UT, which embrace learning, discovery, and engagement and which focus heavily on outreach and external constituencies. The ITI builds upon the unique features of the region, it offers the potential for sustained external funding, and it is a way to access and assemble resources from various disciplines at UT to address opportunities defined with the help of its public and private sector partners.
Vision Statement

To develop technology-enabled intermodal transportation systems and supply chains that promote economic development and quality of life.
Intermodal Transportation Institute

Goals and Objectives

• Create an internationally recognized center of excellence
• Advance technology and expertise in the many disciplines comprising transportation
• Educate a multi-disciplinary work force
• Attract students, faculty, and staff in undergraduate, graduate, and profession programs
• Enhance diversity in the various fields related to transportation
Intermodal Transportation Institute

ITI Development Milestones

• 1990s… Public and private sector organizations encouraged the University of Toledo to develop a center focusing on transportation, logistics, and supply chain issues
• 2001… The Intermodal Transportation Institute (ITI) is created
• 2002… ITI begins operation
• 2005… Resulting from progress of the Intermodal Transportation Institute, the University of Toledo was designated as one of only 60 U.S. Department of Transportation University Transportation Centers (UTC) nationwide.
  – The UTC is a partnership of UT, the lead institution, and Bowling Green State University and Wayne State University.
Growing the UTC and ITI

• Focus Areas & Funded Projects
  – Research
  – Education
  – Technology Transfer
  – Science & Technology Corridor
  – Special Projects
  – Economic Development
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<tr>
<td>BGSU-Bus</td>
<td>Dr. Hokey Min</td>
<td>ITI Research Proposal: Combined Truck Routing and Driver Scheduling Problems Under Hours-of-Service Regulations</td>
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# Active Research

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<td>UT-A&amp;S</td>
<td>Dr. Bhuiyan Alam</td>
<td>Travel Behavior of U.S. Domestic Airline Passengers and Its Impacts on Infrastructure Utilization</td>
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<td>Dr. Hiroyuki Iseki</td>
<td>An Analysis of the Status and Impacts of Public Private Partnerships of the Indiana Toll Road</td>
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<td>Dr. Peter Lindquist</td>
<td>Incorporating Intermodal Transportation into the Spatially Integrated Social Sciences</td>
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<td>Regional Freight Information Resources in the Great Lakes Maritime Transportation System – Phase II</td>
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<td>Regional Freight Information Resources for Market Opportunities in the Great Lakes Maritime Transportation System</td>
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<td>UT-Bus</td>
<td>Dr. Doug Greine</td>
<td>Development of a Secondary Level Education Program in Transportation, Logistics, and Supply Chain Management</td>
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<td>Dr. Mark Vonderembse</td>
<td>Develop a Plan for Cooperative Education in Supply Chain Management at the Undergraduate Level</td>
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<td>Development of a Certificate Program in Transportation, Logistics, and Supply Chain Management</td>
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<td>Dr. Subba Rao</td>
<td>Global Supply Chain Management/Transportation Building a Global Network of Scholars and Educators</td>
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<td>Global Supply Chain Management/Transportation Efficiency Systems Graduate Degree Program</td>
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<td>Dr. Udayan Nandkeolyar</td>
<td>High Speed Transportation Corridor: A Conceptual Framework</td>
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<tr>
<td>UT-Eng</td>
<td>Dr. Kami Makki</td>
<td>A Novel Database Analysis System for Maintenance of Transportation Facilities</td>
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<td>Dr. Mohammad Elahinia</td>
<td>Reducing Noise and Vibration of Hydraulic Hybrid and Plug-In Hybrid Electric Vehicles</td>
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<td>WSU-Eng</td>
<td>Dr. Alper Murat</td>
<td>Value of ITS Information for Congestion Avoidance in Inter-Modal Transportation Systems</td>
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<td>Dr. Snehamay Knasnabis</td>
<td>Developing and Testing a Framework for Alternative Ownership, Tenure and Governance Strategies for the Proposed Detroit-Windsor River Crossing</td>
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The Great Lakes
Maritime Information Delivery System
• Long-term web development project
  – To develop and manage a comprehensive data repository and information clearinghouse for the maritime industry in the Great Lakes
  – To facilitate the acquisition, storage, management, analysis and exchange of data between analysts and stakeholders
  – To draw linkages between maritime freight movements and economic development
BACKGROUND

• Issues to be Addressed by the System
  – Economic impact of Great Lakes shipping
  – The value of shipping to states, cities, regions, etc.
  – Congestion effects of other modes in comparison to GL MTS
  – Competition effects of maritime transportation and rates in contrast to other modes
  – Evaluate short sea shipping opportunities
  – Safety concerns in diverting freight traffic to GL MTS
BACKGROUND

• MAIN ELEMENTS OF THE SYSTEM
  – Detailed data repository for vessel movements, port functions commodity flows, economic activity, economic impacts, etc.
  – An Internet-based GIS data viewer (Citrix Metaframe Delivery)
  – An Internet-based information delivery site for prepared maps, tables, graphics, text, etc.
  – A data exchange supporting user inquiries and furnish information on demand
  – An information clearinghouse to furnish links to other information resources (firms, agencies, universities, etc.)
Major Data Sets Residing in Repository

- Port/dock locations and data—U.S. and Canada
- Satellite imagery / aerial photography of dock facilities
- Integrated Network—Highways, Railroads, Great Lakes Waterway--linked together through Commercial Docks
- Updated Canadian rail and highway networks
- Economic Data (employment, gross domestic product, establishments—by NAICS code and by county):
  - 2000 Census of Population and Housing (including updates)
  - FAF2 OD Flows (National and Regional Scale)
Project Web Site

http://maritime.utoledo.edu
Clearinghouse Home Page

WELCOME TO THE GLMRI ONLINE INFORMATION CLEARINGHOUSE

This Internet Site is the home of a comprehensive data repository and information clearinghouse for the maritime industry in the Great Lakes. The system is envisioned to facilitate the acquisition, storage, management, analysis and exchange of data between analysts and decision-makers within the industry. This system will thus serve as a resource for public policy decisions and for drawing the necessary link between maritime freight movements, economic viability, and environmental quality throughout the Great Lakes and St. Lawrence Seaway. As such, the system will serve as a central focus for diverse interests within the industry to support the promotion of sustainable maritime transportation in the region.

DATA VIEWER

Here is the link to the Data Viewer: Click Below

[Data Viewer]

The data contained in the viewer has a complete meta-data, which could be found in the [Data Documentation] page.
The GIS Data Viewer
The GIS Data Viewer
The GIS Data Viewer

Display Highways
The GIS Data Viewer
The GIS Data Viewer

AADTT 2010
Open docks from pull down menu
The GIS Data Viewer

Display docks
The GIS Data Viewer

Open locks from pull down menu
Display docks and locks
The GIS Data Viewer

Open waterway network from menu
The GIS Data Viewer
The GIS Data Viewer

Focus on Duluth/Superior
The GIS Data Viewer

- Docks
- Highways
- Railroads
- Waterways

- Iron Ore
- Grain
- Coal
- Cement
- Aggregate
The GIS Data Viewer

June, 2006
Coal Tonnage
Source: Lake Carriers Assn.
The GIS Data Viewer

Open economic data from pull down menu
The GIS Data Viewer

Iron and Steel Mills (IMPLAN)
The GIS Data Viewer

Electric Power Generation (IMPLAN) (Rail Network in Red)
The GIS Data Viewer

Electric Power Generation (IMPLAN) in Blue
Coal Mining (IMPLAN) in Green
The GIS Data Viewer

Intermodal Routing through Seaway / Lakes
The GIS Data Viewer

Intermodal Routing through Seaway / Lakes
Routing through Port of Chicago
The GIS Data Viewer

Intermodal Routing through Seaway / Lakes
Routing through Port of Chicago
Connection via Highway to St. Louis
The GIS Data Viewer

US Households:
- 21% within 4 hours
- 52% within 10 hours
- 63% within 15 hours
- 76% within 20 hours
The GIS Data Viewer

US Manufacturing:
24% within 4 hours
55% within 10 hours
64% within 15 hours
76% within 20 hours
LOOKING AHEAD

• Pursue opportunities for adopting automated data acquisition technologies--including AIS
• Continue development of integrated network
• Data Collection: USACE Master Docks Plus Data Collection
  – Develop and Test New Methods for Data Collection
    – Web-Based Data Entry
    – Satellite Imagery and Air Photos
    – Telephone Survey
    – Site Visits
    – Test Methods at Selected Ports
Thank You